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## Space Weather Forecast

Issued on Thursday, 24 November 2022 at 12:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

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**Space Weather Forecast Headline: Slight chance of Minor Geomagnetic Storm (G1) intervals.**

### Analysis of Space Weather Activity over past 24 hours

**Solar Activity:** Solar activity has been Low with a number of common class flares occurring. There are 4 regions on the disk, all stable, weak and magnetically simple. No Earth-directed CMEs were observed.

**Solar Wind / Geomagnetic Activity:** The solar wind persisted at background levels throughout. The total magnetic field strength remained weak with the north-south component only fluctuating slightly. Geomagnetic activity remained Quiet (Kp 0-1).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

### Four-Day Space Weather Forecast Summary

**Solar Activity:** Solar activity is expected to remain Low, with a slight chance of isolated Moderate-class flares.

**Solar Wind / Geomagnetic Activity:** Several recent CMEs occurred on or close to the Earth-Sun line which could give glancing blows on passage. Two from Common-class flares are likely to pass beneath Earth's orbit, but may produce minor peripheral impacts on day 3 (26th). Current background solar winds have the potential to become enhanced day 1 (24th) due to the possible arrival of fast winds from a small coronal hole. Further enhancements are possible through the period, from either the weak passing CMEs or from the arrival of coronal hole fast winds on day 3 (26th). However, this is low confidence. Quiet geomagnetic activity is expected to increase to mostly Unsettled with a chance of Active intervals, and slight chance of isolated G1/Minor Storms on day 1 (24th). Activity remaining mainly Unsettled days 2 and 3 (25th and 26th), but still with the chance of Active intervals and a slight chance of G1/Minor Storm intervals. Becoming mostly Quiet day 4 (27th), with diminishing probabilities of Active periods or any G1/Minor Storms.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

## Geomagnetic Storms:

| Geo-Magnetic Storm          | Level    | Past 24 Hours<br>(Yes/No) | Day 1<br>(00-24 UTC) | Day 2<br>(00-24 UTC) | Day 3<br>(00-24 UTC) | Day 4<br>(00-24 UTC) |
|-----------------------------|----------|---------------------------|----------------------|----------------------|----------------------|----------------------|
| Probability<br>(Exceedance) |          |                           | (%)                  | (%)                  | (%)                  | (%)                  |
| Minor or Moderate           | G1 to G2 | No                        | 20                   | 20                   | 20                   | 15                   |
| Strong                      | G3       | No                        | 1                    | 1                    | 1                    | 1                    |
| Severe                      | G4       | No                        | 1                    | 1                    | 1                    | 1                    |
| Extreme                     | G5       | No                        | 1                    | 1                    | 1                    | 1                    |

## Radio Blackouts - X Ray Flares:

| X Ray Flares | Level            | Past 24 Hours<br>(Yes/No) | Day 1<br>(00-24 UTC) | Day 2<br>(00-24 UTC) | Day 3<br>(00-24 UTC) | Day 4<br>(00-24 UTC) |
|--------------|------------------|---------------------------|----------------------|----------------------|----------------------|----------------------|
| Probability  |                  |                           | (%)                  | (%)                  | (%)                  | (%)                  |
| Active       | R1-R2<br>M Class | No                        | 10                   | 10                   | 10                   | 10                   |
| Very Active  | R3 to R5<br>X    | No                        | 1                    | 1                    | 1                    | 1                    |

## Solar Radiation Storms - (High Energy Protons):

| Radiation Storms            | Level<br>(cm <sup>-2</sup> sr <sup>-1</sup> s <sup>-1</sup> ) | Past 24 Hours<br>(Yes/No) | Day 1<br>(00-24 UTC) | Day 2<br>(00-24 UTC) | Day 3<br>(00-24 UTC) | Day 4<br>(00-24 UTC) |
|-----------------------------|---------------------------------------------------------------|---------------------------|----------------------|----------------------|----------------------|----------------------|
| Probability<br>(Exceedance) |                                                               |                           | (%)                  | (%)                  | (%)                  | (%)                  |
| Active                      | ≥ S1                                                          | No                        | 1                    | 1                    | 1                    | 1                    |
| Very Active                 | ≥ S3 *                                                        | No                        | 1                    | 1                    | 1                    | 1                    |

\* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm<sup>-2</sup>sr<sup>-1</sup>s<sup>-1</sup>)